REMARKS

Claims 1, 2, 4, 6-14 and 16-19 are pending. Claim 3 has been cancelled. Claims 5 and 15 were previously cancelled. No claims are allowed.

The inventor in this application directly contacted the Examiner's Supervisor about the prosecution of this case. Attached is his summary of the conversation.

The inventor has prepared a response to the Final Rejection. He has asked that it be sent as written, which is being done, except for a few very minor modifications of his observations in general about the Final Rejection. The following is thus the inventor's response to the Final Office Action. These arguments will be advanced upon Appeal of the Final Rejection, if necessary. The inventor's frustration with the examining process will be apparent upon reading this Amendment.

Office Action: page 3 (line 1-6)

"Claim 1 recites the limitations …. But does not disclose wherein the microorganism is also removed from the mixing tank."

Response:

The Applicant described in Example 1 (specification page 11) the preparation of the aqueous fermentation medium. "A fermentation medium was prepared consisting of 500 ml distilled water heated to 30°C and 0.5 g dry yeast extract. The 2.5 g active dry yeast (*Saccharomyces cerevisiae)* or 2.5 x 10^{12} bacterial cells (*Streptococcus lactis* or *thermophilus)* were added. A conventional pump was used with the fermenter which circulated the aqueous fermentation medium in and out of the mixing tank in a loop form to maintain a uniform medium. The washed raw potato slices (100g) were added in a very quick succession." It is obvious to the ordinary skilled artisan from this description that the microorganisms are not retained in the mixing tank. Moreover, the Applicant reported in Example 1 (specification page 11) "The aqueous medium was pumped in and out of the mixing tank through a strainer which prevented the potato slices from going through the pump to avoid any physical damages to the slices caused by the pump." Merriam-Webster's 11 Collegiate Dictionary defines a strainer as: "a device that retains solid pieces when a liquid passes through." It is also very obvious to the ordinary skilled artisan that a strainer is different from a filtration membrane. For example, water is purified with a membrane

(reverse osmosis) and not a strainer. For boiled spaghetti, a strainer not a membrane is used to separate the solid from the liquid. A filtration membrane can retain bacteria (such as Levy's invention); however, a strainer cannot due to the large pores size. Nobody purifies water from bacteria using a strainer; otherwise, why should people use membrane and sophisticated technologies to purify water from bacteria. Strainers are commonly used in the food industry to separate solid from liquid. Therefore, unlike to what the Office Action is claiming, the Applicant disclosed in the application that the microorganisms are not retained in the mixing tank.

***Office Action: page 3 (line 10-17)**

"Claim 1 ……..as recited by the limitation "through steps (a) to (e)."

Response:

The main objective of the claimed invention is to remove acrylamide precursors, such as sugar found in starchy foods, which when coupled with a low pH helps reduce the formation of acrylamide during cooking at high temperature such as frying and baking. It is preposterous and defiance to logic and common sense to remove sugar prior to cooking using a

costly process to add it again "during cooking" as the Office Action is claiming. In fact, the Office Action has ignored what the Applicant explicitly disclosed in the specification (Figure 5) that no sugar or any other additives are added to the food product during cooking.

"Heat 500 ml distilled water to 30°C

↓

⋮

Incubate at 30°C for 2.5 hr while mixing using a regular mixer equipped with an impeller and a shaft

↓

Dry and bake at 250°C for 2.5 min"

***Office Action: page 3 (line 17) to page 4 (line 3):**

"Claim 2 recites the limitation …… as recited in instant Claim 3." Claim 2 has been deleted.

***Office Action: page 4 (line 3 to line 10):**

"Regarding instant Claim 14……. to adjust the pH."

Response:

Delete "during" in Claim 14 and the new modified Claim 14 becomes:

New modified Claim 14: The process of Claim 1 wherein the pH of the aqueous medium is adjusted prior to the fermentation.

Old Claim 14: The process of Claim 1 wherein ~~prior to and during the fermentation~~ the pH of the aqueous medium is adjusted prior and during the fermentation.

***Office Action: page 5 (line 8 to line 12):**

"Regarding the new limitation……. as cited in the prior Office Action."

Response:

It is already explained above (Response to Office Action: page 3 (line 1-6)).

***Office Action: page 5 (line 12) to page 6 (line 15):**

"Regarding the addition of food grade acids ……..browning as desired by Hilton."

Response:

The mere mention of a compound such as acid or base in earlier publications does not preclude a patent by a later inventor. Levy's invention and the Applicant's are not related and have different scopes. The fermenting microorganisms, the materials being treated, process mechanics and products are completely different and require different treatments and apparatus. Levy describes a continuous fermentation process for the production of butanol. In contrast, the Applicant teaches a fermentation batch process at low pH levels for selectively removing the acrylamide precursors (mono- and di-saccharides) from uncooked starchy foods, e.g., potato slices, leaving the starch and other ingredients intact. Surprisingly, the Applicant found that at lower pH the acrylamide reduction was much higher than the ones observed at the optimal pH (6-7) for microbial growth, even though at both pHs the amount of reducing sugar was the same <0.1%. At pH 4, which is not optimal for fermentation, the observed acrylamide reduction was about 50% higher than the one observed at optimal pH for microbial growth (Table 8 and 9, specification page 16). Moreover, the Applicant teaches cooking the uncooked, fermented, and mono- and di- saccharides depleted starchy food

to produce acrylamide reduced end products, e.g., potato chips, breakfast cereal etc.

Levy taught in column 4, lines 40-43: "The filter action of filter medium 23 prevents the bacteria in the culture from passing through and retain them in the space between pipe 18 and membrane wall 22." In contrast, the Applicant disclosed in Example 1 (specification page 11) that the microorganism are not retained in the mixing tank. They were circulated in and out of the mixing tank in a loop form to maintain a uniform medium.

Levy taught that the extraction of product was done in an extraction unit separate from the fermentation reactor (Figure 1 and 8). Also, Levy taught in Claim 5 (column 16):" The process of claim 1 wherein said substrate is at least one member selected from the group consisting of beet molasses, blackstrap molasses, citrus molasses, invert sugar, sucrose, fructose, wood sugar and xylose. Moreover, Levy teaches (column 4, lines 59-62) "it is assumed that the extraction operation is conducted with a solvent which is more dense than the mixture of water, butanol, excess sugars and other solvents." These descriptions point that the substrate is exiting the fermentation medium. In contrast, the Applicant teaches that the substrate is retained and the fermenting

microorganisms are exiting through an outlet strainer (Figure 2).

Levy teaches that the product is harvested in a separate unit independent of the fermentation reactor, using a fluorocarbon solvent, so that the culture medium will not be inactivated (Column 2, Lines 15-19; Column 4, Lines 55-68). The Applicant's reactor is not capable of performing the intended use of Levy's invention, because unlike Levy, the culture which is leaving the fermentation tank will be exposed to the fluorocarbon solvent and, therefore, inactivated. Moreover, Levy's reactor is not capable of performing the intended use of the claimed invention, because the fluorocarbon solvent used in Levy's extraction will inactivate the culture, because in the Applicant's case, the culture is circulated in and out of the fermentation reactor. Moreover, the extraction solvent used by Levy (fluorocarbon) cannot be used in food products. Moreover, in the claimed invention, the product needs no extraction. Levy's invention is completely irrelevant and there is no reasonable chance whatsoever of success to do the intended use of the claimed invention.

Scalise (U.S. Patent No. 2,7271,802) describes a process (Figure 1) that "relates to the art of baking

specialties", and more, particularly, to an improved baking specialty comprising derivatives of foodstuffs to be added to a dough to act as a bread improver and softener, a moisture absorber and retainer, a salting retarder, and yeast food "(Column 1, lines 15-20). Scalise teaches to treat certain edible materials containing both carbohydrate and protein with critically small amounts of special colorless or water white, non-toxic, non-oxidizing, and ionizable acids in such a way with live steam as to go beyond the stage of the treshhold hydrolysis to disintegrate the starch and depolymerize the protein components of such materials to provide a base from which an improved baking specialty can be made (Column 1 line 42-49). In Claim 1 (Column 11 lines 41-46) Scalise stated: "The wet process of reducing a water soluble edible baking specialty containing derivatives of wheat flour including SUGARS and adapted to be added in the amount of 2% to leavened goods and to be dispersed completely throughout the mass..." Moreover, Scalise stated on column 2, lines 30-36 is:" After conversion, the liquefied mass of acid character is treated with a neutralizing agent to reduce the acidity thereof and to adjust the pH within a range of 5-7. When the pH has been adjusted, the mass can be dried in any suitable manner, such

as spray drying to produce a dried product, preferably in the form of a powder which can be used as a baking specialty." However, in contrary to the teaching of Scalise, the Office Action stated (Page 6, lines 6-8): "Even further, Scalise (US No 2721802) is relied on as further evidence of using a neutralizing agent to reduce the acidity to between pH of 5-7 for a yeast fermentation (column 2, lines 30-33)." Moreover, the Office Action also stated (Page 6, lines 10-14):
"In combination with Scalise, who teach neutralizing agents for potato fermentation wherein the agents results in the pH for the fermentation to be within 5-7." Again the Office Action has misconstrued the reference and considered the pH of Scalise's powder (pH 5-7) the pH of the fermentation medium, which is not true. Then the Office Action used its false conclusion and stated (Page 6, lines 12-14):" It would have been obvious to adjust the pH of the aqueous medium to between 5-7 for the purpose of ensuring optimum fermentation conditions." In fact, the addition of Scalise powder did not change the pH of the fermentation medium. When Scalise compared white bread without adding his powder (Control Product) to white bread with 10 grams of his powder added (New product) (Column 10, lines 36) the pH of the control white bread was 5.50 and the pH of the white bread New Product was 5.52 (Column 10, line 56).

Moreover, Scalise (Column 11, lines 41-46) used sugar in his product, which is against the teaching of the claimed invention because sugar is a well known acrylamide precursor. The Applicant's invention and Scalise are not related and have different scopes. The fermenting microorganisms, the fermentation medium, the materials being treated, process mechanics and products are completely different and require different treatments and apparatus.

The mere mention of pH in Levy and Scalise's inventions, which are not related in any way shape or form to the Applicant's invention, should never preclude the claimed invention. A new use of a known compound is patentable. The Applicant used different pH levels to test their effect on the reduction of acrylamide rather than to enhance the fermentation conditions. In fact, surprisingly, the Applicant found that at pH 4 the acrylamide reduction was the highest (Table 8, 9; specification page 16), which is not the optimum pH (5-7) for lactic acid bacteria and yeast to enhance the fermentation. A computer-produced printout of all the tens of millions possible usages of pH would forever stop the issuance of patents. In fact, using the strategy adopted by the Office Action, then Levy should have never been granted a patent for

his invention, because Scalise, the prior inventor, used a pH in his invention.

***Office Action: page 6 (line 16) to page 7 (line 4):**

"Regarding the limitation …….. to step e of instant Claim 1."

Response:

The Applicant clearly stated in Examples 1 and 6 (specification page 11 and 17) the positive addition of the food to be fermented to the fermentation reactor. "The washed potato slices (100g) were added in a very quick succession." (specification page 11, lines 10-11). Moreover, on page 17 in the specification (lines 26-27) the Applicant reported:" The acrylamide precursor containing foods (10g) were added in a very quick succession."

***Office Action: page 7 (line 5) to page 17 (line 5):**

"Claims 11-12, 14 and 16 are rejected …….. by Erway within the claimed range."

Response:

a) Hilton versus the claimed invention:

The 2 inventions are not related and have completely different scopes. The fermenting microorganisms, the materials being treated, process mechanics and products are completely different and require different treatments and apparatus. The process described by Hilton is not capable of performing the intended use of the claimed invention:

1. Hilton et al.'s invention relates to the preparation of highly dehydrated potato products exhibiting improved color characteristics upon frying, from potatoes which have undesirably high reducing sugar content. Hilton et al. teach to blanch the potato solids, when starting with raw potatoes, with hot water or steam for a time sufficient to gelatinize a substantial portion of the starch in the solids (Column 2, Lines 57-65). In Example I, Hilton et al teach "The slices were blanched by contact with steam in a chamber maintained at atmospheric pressure for 20 minutes. The blanched potato slices were water-washed to remove excess free starch from the surfaces of the slices, and they were then mashed in a

Hobart meat grinder having a grinding plate with orifices 3/16 inch in diameter." The starting material used by Hilton et al in all the examples (Example I to V) was blanched mashed potatoes, which was subsequently fermented with baker's yeast and dried to 48% solids content. There is no separation of the Baker's yeast after the fermentation is completed and, therefore, the yeast ends up in the final end product. The yeast has detrimental effect on the flavor of the end product. Moreover, Hilton et al. did not use lactic acid bacteria for fermentation, which does not have the detrimental effect on the flavor of the Baker's yeast. In contrast, the Applicant used very thin slices of fresh potatoes, which were subsequently fermented with either baker's yeast or lactic acid bacteria. Moreover, the fermentation medium, including the fermenting microorganisms, was circulated in and out of the reactor in a loop form using a pump until the fermentation was completed. After the completion of the fermentation, the fermented fresh potato slices were washed with water before frying to remove any residues from the fermentation medium left on the slices. Unlike Hilton et al., the fermenting microorganisms, whether lactic acid

bacteria or Baker's yeast, are not present in the final product, they were washed off after the fermentation was completed.

The Office Action claimed, without citing and providing the actual reference, on page 9 (lines 5-6) that:" Blanching has been known to aid in the reduction of acrylamide when cooking such products." In fact, it was not known at the time the invention was made that blanching reduce the formation of acrylamide. The Office Action is using hindsight to establish a foundation for the rejection of the claimed invention. This is not acceptable. Anyway, assuming what the Office Action is claiming true, the Office Action is requested to provide the dated reference that corroborates its claim.

2. The process used by Hilton will not allow a washing step like the one used in the claimed invention, because he is using blanched mashed potatoes. The starting material used by Hilton et al. in all the Examples (Example I to V) was blanched mashed potatoes, which was subsequently fermented with baker's yeast and dried to

48% solids content. Hilton et al. strived to reduce the yeast like taste that was imparted to the potato during fermentation. In order to do that, Hilton et al. fermented the potatoes before rather than after the dehydration step took place (Column 1, lines 17-21 and abstract lines 11-16). Hilton et al. had never ever suggested or implied implicitly or explicitly to wash the fermented mashed potatoes to get rid of the yeasty taste. However, the Office Action stated:

a) "Even further however, it is noted that Hilton et al. teach that the potatoes may also be given other treatments before or after blanching or at other convenient times. This teaches that at any point in the process another processing step can be imparted on the potatoes." (Page 12 lines 12-14).

b) "It is unclear as to why since Hilton et al. used blanched mashed potatoes that said mashed potatoes would not be capable of being washed.(Page 12 lines 10-12).

c) "Hilton et al. further teach providing less yeasty or fermentation taste to the product upon frying, it would

have been obvious to wash the potato product prior to frying for the purpose of achieving a less fermentation or yeast like taste." (Page 13, lines 3-6).

In fact, the Office Action used hindsight and reconstructed the invention for Hilton et al. by imparting a new inventive step that Hilton et al. were not aware of at the time their invention was made. The hypothetical inventive step recently imparted by the Office Action for Hilton et al. is to wash the fermented mashed potatoes. Then the Office Action considered its suggested inventive step as a prior art against the claimed invention to establish a ground for obviousness. The Office Action took the statement of Hilton et al. "other treatments before or after blanching or at other convenient times" (Column 3 lines 2-6) out of context and conveniently imparted a washing step that Hilton et al. themselves are not aware of and never mentioned it in their invention. Anyway, the Office Action failed to impart another inventive step, to succeed the washing step that it imparted above, to separate its newly created mix of washing water, the yeast and the washed mashed potatoes.

3. Hilton teaches "Among the materials which may be added to the mixture to be formed, are, for example, starch containing ingredients such as rice, tapioca, potato or wheat flour or starches, antioxidants or other additives, and the solids are composed to major extent of potato solids (Column 6, Lines 7-12). The addition of the materials suggested by Hilton took place after the fermentation was accomplished. These materials were not subjected to the fermentation process, and since these materials are rich in acrylamide precursors, the amino acid asparagine and sugars (Reference I, Research Association of the German Food Industry, 2005, Table 1, page 23), therefore, they lead to increased formation of acrylamide in the end product during cooking. In contrast, the Applicant added 0.5% Dry Yeast Extract (a fermentation aid) that is free of the amino acid asparagine and has a negligible amount of sugars (<<0.04%, Reference II nutritional composition), before the onset of the fermentation to support the initial growth and activities of the fermenting microorganisms. The Applicant used the entire fermented product, without addition of any unfermented materials after the fermentation was accomplished, to keep the acrylamide

precursors levels low so that the acrylamide formation in the end products will be significantly reduced during cooking. The process described by Hilton is not capable of performing the intended use of the claimed invention because it promotes the formation of acrylamide. Even the Office Action acknowledged in the prior Office Action mailed on June 14, 2006 (Page 3, lines 19-21) that : "The addition of the second source of potato (Column 2, Lines 60-63) or the other starch-containing materials (Column 6, Lines 7-12), inherently provides both a source of added sugar and amino acid..."

4. Hilton et al. did not use a pH adjusting step whether prior, during or after their yeast fermentation process. They never mentioned anything about pH. The Office Action stated on page 11 (lines 20-21) that:" Hilton et al. still teach Applicant's concept fermentation for the purpose of reducing browning (and thus the formation of acrylamide)." Despite the fact that the Office Action is again using hindsight, the Office Action has, in order to establish obviousness, jumped to the false conclusion that the reduction of acrylamide is solely and directly tied to the reduction

in browning. However, the facts showed otherwise. Hilton et al. stated in (Column 4, Lines 5 -14):" In this test, the fried products, for greatest acceptance, should have an Agtron color value in the range of about 65 to 75, and manufacturing specifications such as those used in making potato chips may require that the product have an Agtron color value in the range of about 68 to 74. Fried products of such preferred colors usually can be obtained in accordance with the present invention when the reducing sugar content of the material fried is less than about 0.5 weight percent on a solids basis." In the claimed invention, the reducing sugars levels were reduced by fermentation to <0.1%, at least 5 times lower than the amount reported by Hilton et al. (0.5%) where no browning was observed. It is obvious to the skilled artisan that when the reducing sugar levels is <0.1%, browning is also not existing, since it was not even observed at 0.5% as reported by Hilton et al. However, no browning does not mean no acrylamide formation. In fact, the observed acrylamide reductions in the claimed invention (specification page 16 Table 8 and 9) at a reducing sugar level of <0.1% (where no browning is observed) and optimal pH 7-6 that enhances the

fermentation the acrylamide reductions were just 20 and 23%, respectively. However, when the pH was reduced to 4, the acrylamide reduction was increased to 74% without any change in the amount of reducing sugars (<0.1%). In the claimed invention, the Applicant intercalated a pH adjusting step prior to the onset of the fermentation, and when necessary, depending on the type of food being treated, during the fermentation. Surprisingly, at lower pH, the acrylamide reduction was much higher than the ones observed at the optimal pH (6-7) for microbial growth, even though at both pHs the amount of reducing sugar was the same <0.1%. The higher acrylamide reduction obtained at pH 4 indicates that a low pH has an effect on the acrylamide reduction along with microbial fermentation, regardless of the amount of reducing sugars. Therefore, reducing browning does not inhibit acrylamide formation as the Office Action is falsely concluding, based on hindsight. Hilton et al. do not even remotely suggest Applicants' process alone or in combination with any of the other references.

b) Levy versus the claimed invention:

Discussed above.

c) Yeast Growth Medium versus the claimed invention:

Yeast Growth Medium" used by the current and prior Office Action is not a peer reviewed reference, a patent or even an experiment, it is an internet conversation between Steve Quest who posted a question on the internet looking for an ideal growth medium for Saccharomyces yeasts and the responder Munn Alan Leslie. During the internet exchange, Mann Alan Leslie suggested the growth mediums "YPD (1% Difco Bacto Yeast Extract, 2% Difco Bacto Peptone, 2% dextrose (i.e. glucose) as non selective medium and SD (0.67% Batco Yeast Nitrogen Base, 2% dextrose (i.e. glucose) and necessary auxotrophic supplements (depending on the strain) as selective." Steve responded: "These SOUND like natural growth mediums". Based on the information exchanged, it is not known whether any of these media has any synthetic component in it. In fact, even Steve himself did not know whether the medium is synthetic or natural, he said: "sound like." Unfortunately, the Office Action took it out of context and determined that:" Yeast Growth Medium teaches that yeast extract is a natural growth medium." Scientific conclusions must be based on solid facts and reliable data; otherwise, they're unacceptable in the scientific community. Anyway, assuming this could be used as

prior art, the internet conversation entitled "Yeast Growth Medium" that the Office Action is referring to is recommending the addition of dextrose (glucose), an acrylamide precursor, which will increase the formation of acrylamide. This is in contrast to what the Applicant is teaching and, therefore cannot be used in his process. Moreover, this internet conversation does even remotely suggest that the dry yeast extract used by the Applicant can be used as a growth medium for lactic acid bacteria.

d) Scalise (US 2721802) versus the claimed invention:

Discussed above

e) Erway versus the claimed invention:

Erway teaches blanching potatoes with 0.5 to 0.7% acid solution (glucono delta-lactone) using the time and temperature parameters that are commonly known to the industry: 15-20 minutes and 165°F -190°F, respectively. The acid blanching step is followed by cooling, seeding with lactic acid bacteria, weighing and packaging (Column 7, line 47 to Column 8 line-17). According to Erway, blanching potato with an acid solution was known in the art (column 2, line 65 to column 3, line 2). The process described by Erway is not capable of

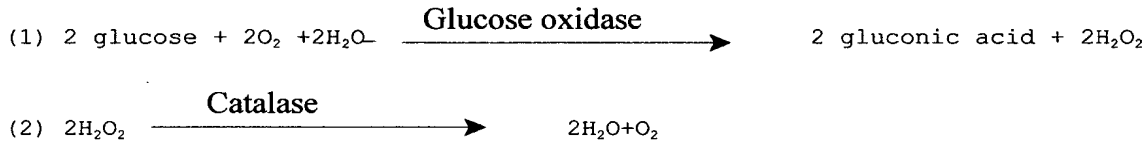
performing the intended use of the claimed invention. The two (2) inventions are not related and have different scopes. The fermentation medium and parameters, the materials being treated, process mechanics and products are completely different and require different treatments and apparatus. For example, in addition to the lactic acid bacteria and potatoes, the Applicant's fermentation medium comprised water, neutralizing agent, and a fermentation aid (Dry Yeast Extract), and baker's yeast. Erway did not remotely suggest, silently or explicitly, the use of these items; he just used acid blanched potatoes, which was known in the prior art at the time of his invention, and lactic acid bacteria. Unlike the Applicant, Erway's acid blanched potatoes were directly seeded with lactic acid bacteria using a vibrating shaker (column 8, lines 5-15) and packaged. The Applicant's fermentation apparatus, described in Figures 2 and 3, consists of a simple mixing tank equipped with a mixer or a pump. In the preferred claimed invention, the fermentation medium, including the fermenting microorganisms, is circulated in and out of the reactor in a loop form using a pump while the substrate (fresh potato slices) remain stationary in the reactor (Figures 1 and 2). After the completion of the fermentation, the fresh fermented potato slices are washed with water before cooking

to remove any residual leftover from the fermentation medium including the fermenting microorganisms that can negatively affect the flavor. In contrast, in Erway's process, the lactic acid bacteria remain on the potato to prevent the growth of undesirable pathogens and, therefore extend the shelf live of the potato during storage. The Office Action stated (page 16, lines 17-20) that: "Although applicant states that control of the pH cannot be achieved by lactic acid bacteria alone, it is respectfully asserted that Erway provides a direct teaching of a change in the pH to between 4.7 and 5.7 as a result of the lactic acid fermentation." The Office has again misconstrued Erway's invention. In fact, what Erway said:" The blanching serves at least four purposes, namely: reduction of pulp pH...etc.." (Column 7, lines 57-58). Moreover, Erway said that : "The utilization of GDL (Glucono delta-lactone) as the acid in the blanch water can lower the potato pulp pH levels in ranges of 5.7 to 4.7 which in itself can have an adversarial effect on undesirable microbial growth." It is the GDL that is reducing the pH to 5.7 to 4.7 and not the lactic acid bacteria as falsely claimed by the Office Action.

f) Baldwin versus the claimed invention:

The 2 inventions are not related and have completely different scopes. The fermenting microorganisms, the materials being treated, process mechanics and products are completely different and require different treatments and apparatus. Baldwin used enzymes and taught against the usage of the microorganisms used by the Applicant. In the prior Office Action, mailed on 04/04/2007, the Office Action stated that Baldwin on column 1, lines 15-22 teaches that "fermentation using lactic acid bacteria would have improved the quality and storage properties of the food." Again, the Office Action has misconstrued the reference. In fact, contrary to what the Office Action is stating, Baldwin teaches on column 1, lines 15-22 that:" This invention relates to an enzymatic process and the product formed by the process. The invention has particular usefulness in the preparation of certain food products in order to improve their quality and storage properties. The invention is particularly useful in the preparation of dehydrated egg products, but it also finds use in the processing of other foods, such as potatoes, coconut, cereals and the like." Baldwin on column 1, lines 15-22 is reporting the benefits of his enzymatic process and not the benefit of lactic acid bacteria as falsely stated by the Office Action. In fact, unlike what the Office Action is stating,

Baldwin teaches against the use of fermentation by lactic acid or yeast due to the several disadvantages associated with it (column 1, line 64 to column 2, line 44). Baldwin's invention is based on the use of glucose oxidase in the presence of oxygen to convert glucose to gluconic acid, and decomposition of hydrogen peroxide by the catalase enzyme in accordance with the following reactions (column 3, lines 19-50):



However, in the last Office Action, mailed on 10/18/2007, the Office Action has recanted its previous misconstrued and fabricated quote about the teaching of Baldwin in order to hold it as a relevant prior art to the claimed invention and stated on page 11 (lines 3-7) of the last Office Action: "It is recognized that the invention of Baldwin does not directly teach using lactic acid and further teaches using an enzymatic process however in the cited section, Line 15-45, Baldwin teaches that it has been known in the art to use lactic acid bacteria fermentation for the similar purpose as that of Hilton et al. , which is to reduce browning." Baldwin said on column 1 (lines 39 -45):" Up to the present time the only commercial methods that have been satisfactory for removing

this naturally occurring glucose are fermentation methods wherein the egg white is subjected to fermentation by bacteria or yeasts in order to convert the glucose to carbon dioxide, water, ethyl alcohol and/or lactic acid." This was reported in the introduction of Baldwin. Baldwin did not even cite a specific reference, because there are millions of publications where bacteria and yeast were used for fermentation. In fact, this is how bacteria and yeast function. Again, the mere mention of bacteria and yeast for fermentation in earlier publications does not preclude a patent by a later inventor. A computer-produced printout (a google search or others) of all the hundreds of millions possible usages of bacteria and yeast would forever stop the issuance of patents. In fact, using the strategy adopted by the Office Action, then Hilton should have never been granted a patent for his invention, because the prior inventor Baldwin mentioned the obvious in the introduction of his invention, which has nothing to do with yeast or lactic acid bacteria, that bacteria and yeast are used for fermentation. Considering Baldwin's statement about yeast and lactic acid bacteria by the Office Action as a prior art against the claimed invention is like considering google as an inventor and therefore a prior art against all the inventions in the world rather than just a computer search.

g) Catalog of Bacteria and Phages versus the claimed invention:

The Office Action stated:" The catalog of Bacteria and Phages has been cited as additional evidence of Lactobacillus species that use a medium comprising yeast extract." In fact, on page 415 of the Catalog of Bacteria and Phages *(Media Formulations)* in addition to the dry yeast extract, they also added glucose, skim milk and other sugars which are well know acrylamide precursors and, therefore, increase the formation of acrylamide. In contrast, the Applicant teaches the opposite, which is the removal of sugars from the fermented uncooked product (mono- and di-saccharides <0.1%, Table 2, 3, 4, 5, 6, 7, 8 and 9) using a selective fermentation aid to, in the presence of a low pH (pH 4) avoid the formation of acrylamide during cooking. Acrylamide formation involves the reaction of sugar (mono-, di- and oligosaccharides) with free asparagine. Sugars (mono-, di and oligosaccharides) and asparagine are acrylamide precursors. Therefore, glucose, skim milk and the other sugars added to the dry yeast extract as taught by the Catalog of Bacteria and Phages promotes the formation of acrylamide in the bakery end-products. The Applicant used 0.5% Dry Yeast Extract (Figure 1, 4, 5 and 6) as a fermentation aid, before the onset of the fermentation to support the initial growth and activities of

the fermenting microorganisms. The Dry Yeast Extract, which is the water soluble component of the yeast cell, is mainly protein and lacks the acrylamide precursor asparagine, (Reference II, nutritional composition), and contributes only a small amount of carbohydrate (0.03 to 0.06%, an average of 0.04%) to the fermentation medium at the 0.5% usage level reported by the Applicant. That small amount of carbohydrate (0.04%) consists of starch, fiber, and sugars; therefore, the amount of sugars coming from the Dry Yeast Extract is even way less than 0.04%. Moreover, after being subjected to the fermenting microorganisms as described in Figures 1, 4, 5 and 6, that very minute amount of sugars from the Dry Yeast Extract was even reduced more. Since asparagine is naturally not present in the Dry Yeast Extract, and the amount of mono- and di-saccharides is very minute (<<0.04%); therefore, the addition of Dry Yeast Extract, as a fermentation aid, does not promote the formation of acrylamide. Unlike the Applicant's fermentation aid, the fermentation medium recommended by the catalog of Bacteria and Phages promotes the formation of acrylamide. Therefore, the fermentation media recommended by the catalog of Bacteria and Phages are not capable of performing the intended use of the claimed invention.

h) Siegle (US 3833737) versus the claimed invention

The 2 inventions are not related and have completely different scopes. The fermenting microorganisms, the materials being treated, process mechanics and products are completely different and require different treatments and apparatus. The process described by Siegle is not capable of performing the intended use of the claimed invention. Siegle described a process for treating cereal grains, such as wheat, rye, and the like, with a mixture of water and yeast for a time sufficient for said grains to imbibe a substantial quantity of said water. The grains are then milled into flour, either with or without a preliminary washing and/or a preliminary drying (abstract of the disclosure). The mere mention of washing in earlier publications does not preclude a patent by a later inventor. The mere fact that Siegle mentioned in his invention "with or without preliminary washing" in a process that is not even remotely related to the claimed invention, should not preclude the claimed invention. A computer-produced printout of all the tens of millions of possible usages of washing would forever stop the issuance of patents. In fact, using the strategy adopted by the Office Action, then Siegle should have never been granted a patent for his invention, since washing fermented products, for example cheese curd, right after

fermentation has been known and used for hundreds of years. Again the Office Action strategy is false and misleading.

i) Champagnat et al. (US 3193390) versus the claimed invention:

The 2 inventions are not related and have completely different scopes. The fermenting microorganisms, the materials being treated, process mechanics and products are completely different and require different treatments and apparatus. The process described by Champagnat is not capable of performing the intended use of the claimed invention. Champagnat described an industrial process for the production of food yeasts starting from petroleum fractions (Column 1, lines 23-25). The Office Action stated on page 10 (lines 16-19) that Champagnat et al. "is cited as further evidence that yeast extracts have been well known to be used by the ordinarily skilled artisan for the purpose of producing yeast (see column 2, line 23 to Column 4, line 67)." In fact, Champagnat et al. never used the yeast extract alone, as it was selectively reported by the Office Action. Yeast extract was used as an element of a mineral medium, which is part of a nutrient medium containing paraffinic hydrocarbons of petroleum origin (column 2, line 23 to Column 4, line 67). Again, the Office Action has misconstrued the reference and selectively picked just yeast

extract and disregarded the other important ingredients of the fermentation medium described by Champagnat such as the core of his invention paraffinic hydrocarbons.

Conclusion:

The Office Action stated (Page 15, Lines 3-8):" The Examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art." The Office Action based its case of obviousness on 22 references, 13 of which were abandoned by the Office action in prior correspondence, and the other irrelevant remaining 9 references including a conversation taking from an internet chat room are still active: Levy, Sidney (U.S. Patent No. 4,568,643); Russel Balwin Robert (U.S. Patent No. 2,744, 017); Erway, Dale E. (U.S. Patent No. 5,750,165); Hilton et al. (U.S. Patent No. 4,140,801); Oreste Scalise (U.S. Patent No. 2,721,802); Champagnat, Alfred., et al. (U.S. Patent No. 3,193,390); Siegle, Jack (U.S. Patent No. 3,833,737); Catalogue of Bacteria and Phages (18th Edition, 1992), Yeast Growth Medium (Internet

Chatting). As discussed above, unlike the claimed invention, the Yeast Growth Medium and also the Catalogue of Bacteria and Phages never used dry yeast extract as the sole fermentation aid for yeast and bacterial fermentation; however, their growth media comprised dry yeast extract and other ingredients such as dextrose, skim milk and others which are well known acrylamide precursors. Therefore, they teach against the teachings of the claimed invention. Unfortunately, the Office Action was very selective and failed to consider the acrylamide precursors additives recommended by these two references. It just reported the use of dry yeast extract in order to consider these references as prior art against the claimed invention. The same Office Action strategy was used with Champagnat, who used a growth medium comprising yeast extract, minerals and paraffinic hydrocarbons. Again, the Office Action was selective and ignored the paraffinic hydrocarbons and minerals and just reported yeast extract only in order to hold Champagnat's invention as a prior art against the claimed invention. Levy describes a process that is completely irrelevant (the mechanics, the microorganisms used, the fermentation aid, the growth medium and the apparatus) to the claimed invention. The re-circulation medium of Levy is completely different than the claimed invention. The Office

Action reconstructed Hilton et al.'s invention based on hindsight and added a hypothetical washing step for the fermented mashed potato to get rid of the yeast flavor that Hilton et al. did not use in their invention because it defies logics. And since Hilton et al. described a process to reduce browning in potato upon frying, then the Office Action assumed the role of inventors and falsely concluded that reduction of browning inhibits acrylamide formation. However, in order to make the case stronger, the Office Action even went further and made a bigger claim that blanching reduces the formation of acrylamide in food products without citing or providing the reference. No one knew or was aware of this claim at the time the invention was made but the Office Action. Again, the Office used its questionable approach and misconstrued Scalise's invention and conveniently considered the pH of Scalise's powder (pH 5-7) the pH of the fermentation medium, which is not true. Then the Office Action used its misconstrued and false conclusion as a prior art against the claimed invention. With respect to Baldwin's invention, again it was misconstrued by the Office Action; however, in the last Office Action, mailed on 10/18/2007, the Office Action has recanted its previous misconstrued quote about the teaching of Baldwin in order to hold it as a relevant prior art to the

claimed invention. And the new Office Action strategy stated that "Baldwin teaches that it has been known in the art to use lactic acid bacteria fermentation for the similar purpose as that of Hilton et al. , which is to reduce browning." Again this is not relevant to the claimed invention, because the reduction in browning does not inhibit the formation of acrylamide as the Office Action claimed. Time and again, the Office Action has misconstrued references and Erway's invention is no exception. The Office action claimed that Erway provides a direct teaching of a change in the pH to between 4.7 and 5.7 as a result of the lactic acid fermentation. In fact, Erway said that it is the GDL in the blanch water that reduced the pH to 5.7 to 4.7.

This is the prior art that the Office Action used to make its case. The Office Action strategy is based on hindsight, reconstruction of invention, addition of new hypothetical inventive steps, falsely reporting and paraphrasing what the actual inventors of the prior art have discovered. The Office Action strategy used in prosecuting the claimed invention is false, misleading and contradicts the principal purpose of the Patent Act and Article I, Section 8, Clause 8 of the Constitution which is to promote the "useful Arts" by encouraging the practical exercise of human ingenuity.

The Office Action strategy is unacceptable and unfair to science and inventors.

However, in view of the prior art cited, it would not have been obvious to one having ordinary skill in the art at the time of the invention to have employed a pH pre-adjusting step in conjunction with removal of acrylamide precursors by microbial fermentation in the processes of the cited art and motivation for doing so is simply not suggested. Moreover, where pH is discussed in the prior art with respect to lactic acid bacteria (Erway), it involves acid blanching which teaches away from the instant invention. Applicant's extensive analysis of the variables involved and discussion with respect to the pertinent prior art constitute a solid ground for the patentability of the instant invention.

It is now believed that Claims 1, 2, 4, 6-14 and 16-19 are in condition for allowance. Notice of Allowance is requested.

Respectfully,

Ian C. McLeod
Registration No. 20,931

IAN C. McLEOD, P.C.
2190 Commons Parkway
Okemos, Michigan 48864

Telephone: (517) 347-4100
Facsimile: (517) 347-4103
Email: ianmcld@comcast.net

Attachment: Interview Summary by Applicant